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Northern Affairs Program

A Guide to Socio-Economic Impact Monitoring in the Northwest Territories

Report 2-86

Prepared for:

Department of Indian Affairs and Northern Development
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TABLE OF CONTENTS

1.	Introduction	1
2.	The Nature of Socio-Economic Monitoring	2
3.	The DIAND Norman Wells Socio-Economic Impact Monitoring Program, 1982 to 1986	5
	3.1 Other Monitoring Programs	7
4.	The Design of the DIAND Monitoring Program	8
	4.1 Selection of the Impact Zone	9
	4.2 Data Needs for Monitoring	9
	4.3 Primary and Secondary Data	9
	4.4 Confidentiality	10
	4.5 When to Collect Data	11
	4.6 How to Collect Data	12
	4.7 What Questions	13
	4.8 The Length of the Questionnaire	14
	4.9 Design of Questions	14
	4.10 Pre-Testing the Questionnaire	14
	4.11 Basic Questions and Impact Questions	15
5.	Field Survey Work	15
	5.1 The Question of Sampling	16
	5.2 Time Required for Surveying	17
	5.3 Household Participation Rate	19
	5.4 Survey Training Programs	20

5.5 The Business and Public Services Questionnaire 21

6. The Creation of a Database 21

6.1 Coding of Responses 22

6.2 Verification of Coded Data 22

6.3 Data Files 23

6.4 Frequency Tables 24

6.5 Other Statistical Analysis 25

7. Report Preparation 25

7.1 Report Writing 25

7.2 Report Printing and Distribution 26

8. The Need For Monitoring 26

9. Who Uses Monitoring Information? 31

9.1 Distributing the Computer Printouts 32

10. Organizational Changes 33

10.1 Community Monitoring Boards 34

10.2 A Regional Monitoring Board 35

10.3 A Permanent Monitoring Agency 36

10.4 Location of the Monitoring Agency 37

10.5 Monitoring and Funding 38

11. Recommendations 39

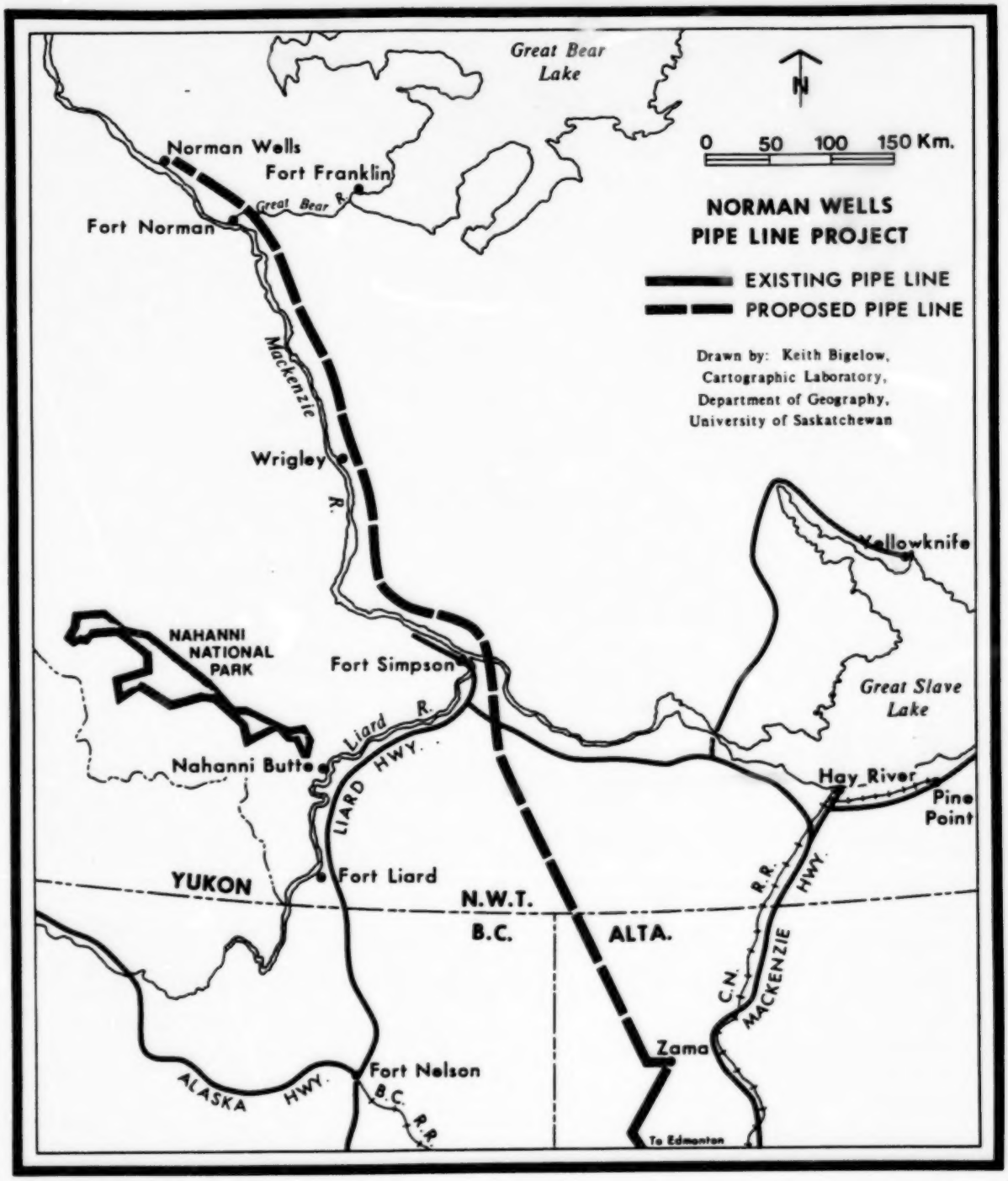
11.1 Organizational Changes 39

11.2 Data Collection 40

11.3 Information Distribution 41

12. Conclusions 41

13. References 44


Great Bear Lake
N
0 50 100 150 Km.
NORMAN WELLS
PIPE LINE PROJECT
EXISTING PIPE LINE
PROPOSED PIPE LINE
Drawn by: Keith Bigelow,
Cartographic Laboratory,
Department of Geography,
University of Saskatchewan
Norman Wells
Fort Franklin
Great Bear R.
Fort Norman
Mackenzie R.
Wrigley
Yellowknife
NAHANNI NATIONAL PARK
Fort Simpson
Great Slave Lake
Liard R.
Nahanni Butte
LIARD HWY.
Hay River
Pine Point
YUKON
Fort Liard
N.W.T.
B.C.
ALTA.
C.N. R.R.
MACKENZIE HWY.
Zama
Fort Nelson
ALASKA HWY.
B.C. R.R.
To Edmonton

1. INTRODUCTION

In the late 1970s, The Norman Wells Oilfield Expansion and Pipeline Project (the Norman Wells Project) was proposed by Esso Resources Ltd. (Esso) and Interprovincial Pipe Line Ltd. (IPL). This proposal was designed to expand production from the rich oil reserves found near the community of Norman Wells and to ship this oil by pipeline to southern markets. In 1981, the federal government approved the Norman Wells Project proposal and construction began in the following year. At the same time, the federal government through its Department of Indian Affairs and Northern Development (DIAND) initiated a monitoring program of the anticipated economic and social effects of this project on northern peoples living in communities along the pipeline route. This monitoring program, the Norman Wells Socio-Economic Impact Monitoring Program, represents the first effort at socio-economic monitoring in Canada. While sponsored by the Department of Indian Affairs and Northern Development (DIAND), the actual monitoring work was contracted to the University of Saskatchewan under the direction of Dr. Robert M. Bone (Bone, Green and Mahnic, 1983; and Bone, 1984).

The purpose of this report is to provide a record of the Norman Wells Socio-Economic Impact Monitoring Program. The specific goals of this report are: (1) to document the essential elements of the Norman Wells monitoring program and (2) to make recommendations for future monitoring efforts in the Northwest Territories.

The basic principle underlying this report is that socio-economic monitoring of large-scale industrial projects in Canada is an important function of government and that monitoring, by providing socio-economic impact information to all levels of government, helps to formulate policy aimed at reducing regional economic and social inequalities. In northern Canada, the need for monitoring is especially desirable because of the existence of a dual economy which reveals a large gap in socio-economic conditions between native and non-native residents. While this same gap exists in southern Canada, the magnitude of the problem is much larger in northern Canada where the native population often consists of over half the total

population. In 1981, for example, native peoples formed 58% of the population of the Northwest Territories and yet accounted for only 25% of the professional and managerial positions (Statistics Canada, 1983). Therefore, federal intervention in the market place can be justified on at least two grounds: (1) the need to address the socio-economic gap between natives and non-natives and (2) the need to strengthen the northern economy.

In the case of the Norman Wells Project, one indication of the federal will to ensure that northerners benefited from the construction of this mega-project and, at the same time, were spared any major negative impacts, was the requirement for the companies to address the concerns raised in the report of the Federal Environmental Assessment Review Office (FEARO). This federal requirement resulted in the preparation of Socio-Economic Action Plans by the two companies (Esso, 1982 and IPL, 1982). This requirement marks an important shift in federal policy by providing some quasi-legal demands upon the companies to meet certain development targets in the North.

Other signs of the federal government's commitment to ensure benefits from the Norman Wells Project went to northern peoples were (1) the establishment of the Federal Coordination Office in Yellowknife, (2) the authorization by the federal cabinet to allocate $21.4 million to an impact funding program and (3) the initiation of the Norman Wells Socio-Economic Impact Monitoring Program.

2. THE NATURE OF SOCIO-ECONOMIC MONITORING

Socio-economic impact monitoring is a new field of applied scientific investigation and few industrial projects have been monitored during the course of their construction. The Norman Wells Project, the first mega-project to be monitored in Canada, represents an important model for future socio-economic monitoring programs.

The purpose of monitoring is twofold: (1) to record the economic and social characteristics of a population over time and to identify changes in that population caused by the construction of a large-scale industrial project, and (2) to improve

the management of development impacts. Monitoring is concerned with documentation of the effects of development and it therefore emphasizes quantitative measures of actual and perceived socio-economic impacts recorded during the construction of an industrial project. The quantitative data are frequently derived from the responses of local residents to a series of questions about the local effects of the project. Some of these responses provide basic data, such as the number of households and businesses in each community, while others focus on impact data, such as an estimate by the respondent of the degree of positive or negative social impacts upon his family and community over the course of the Norman Wells Project. The monitoring information can then used by government to devise methods to increase benefits to communities or to address adverse effects.

Socio-economic monitoring of the Norman Wells Project did not include surveillance or inspection activities. Instead, the primary aim of the Norman Wells Socio-Economic Impact Monitoring Program was to provide census-like data on a broad range of socio-economic characteristics of the impacted population.

Surveillance could refer to observing and reporting on a problem between a resident and one of the subcontractors, while inspecting could refer to examining and then approving or rejecting working conditions. Surveillance and inspection activities usually measure performance against some standard or regulation and therefore they could be described as compliance monitoring.

Compliance monitoring normally falls under the control of public regulatory agencies or departments which should have a legal mandate to enforce such regulations. Since the findings of these agencies may have implications for a socio-economic monitoring program, regular communications between a monitoring team and the officials of regulatory agencies or departments are desirable.

The purpose of monitoring is to assist the planning process by providing useful information. Carley (1984, p. 19) defined monitoring as "... the systematic collection and organization of information, which is to be used in improving the decision-making process; either indirectly by informing the public, or directly as a

feedback tool designed for purposes of project management, program evaluation or policy development." In this sense, socio-economic monitoring keeps track of both the positive and negative effects of a project on people and their communities. This information is then used by the regulatory agency to have the proponent make any desired adjustments in the project.

Social impact assessment of proposed projects is also a new field of study but, unlike monitoring, there are many examples of assessments of proposed projects. In Canada, both the federal and provincial agencies have undertaken social impact assessments as part of their environmental impact assessment. For this reason, a great deal has been written on the subject of social impact assessment. In much of this literature, a public inquiry approach is stressed and, for the Canadian North, the Berger Inquiry is regarded as an important example of a public inquiry style of social impact assessment (Lang and Armour, pp. 120-121; and O'Riordan and Sewell, chapter 4). FEARO environmental assessment panels, such as the Norman Wells Oilfield Development and Pipeline Project Panel, also emphasize public hearings in their evaluation of proposed industrial projects. In this way, the concerns and fears of local residents about a proposed project are discussed at public hearings and they are often included in the reports of the FEARO panels.

In some assessment literature, monitoring is seen as an extension of the assessment procedure, i.e., as an auditing of the construction of an industrial project. The logic of this approach is that social impact assessment is seen as the pre-project appraisal while the monitoring is viewed as a measuring of the actual impacts. The absence of a monitoring role in the assessment procedure is noted in Canadian literature (Beanlands and Duinker, 1983; Duinker, 1985 and Rigby, 1985).

Both social impact assessment and socio-economic monitoring have the ultimate goal of assisting the public planners and the corporate decision-makers. This assistance takes the form of providing useful information upon which the industrial project can provide more benefit to the region while at the same time reducing its negative effects.

Unlike social impact assessment programs, monitoring does not deal with the issue of approving or rejecting a proposed development scheme. Instead, monitoring measures the socio-economic impacts of an approved project on the people and their communities and, using these data, establishes impact patterns and trends. This information has at least three roles: (1) it assists the regulatory agency in determining whether or not the obligations of the proponents are being kept and, if not, what modifications in the project are required, (2) it provides objective information which should assist companies to prepare future proposals and government agencies to plan for them and (3) it produces information useful to community and regional groups and this information about the project should allow them to make better decisions about how to deal with its positive and negative socio-economic impacts.

In the case of the Norman Wells Project, there was no single agency serving as a socio-economic regulatory body based on appropriate legislation. This lack of legal authority is a serious weakness in the socio-economic monitoring process in the Northwest Territories. Only a few of the GNWT departments, such as the Safety Division, had the authority to enforce specific legislation related to socio-economic matters. For this reason, efforts by other government agencies to modify the Norman Wells Project in socio-economic matters were limited to moral suasion.

3. THE DIAND NORMAN WELLS SOCIO-ECONOMIC IMPACT MONITORING PROGRAM 1982 to 1986

Monitoring, unlike assessment, deals with the impact of real events on people and their way of life. In this study, socio-economic monitoring involved the recording of the effects of a large-scale industrial project on some 2000 people living within the direct impact zone. The majority of these residents is of native ancestry. The construction of the Norman Wells Project dominated the region's economy and had a strong influence on the local residents.

In early 1982, the Northern Policy and Program Planning Branch of the Department of Indian Affairs and Northern Development (DIAND) recognized the

need for statistical data on the effects of the Norman Wells Project on residents in the four communities located along the pipeline route. These four communities, identified as having the greatest potential to be affected by the project, were Norman Wells, Fort Norman, Wrigley and Fort Simpson. The task of monitoring the impacts of this mega-project upon the four communities required household-level data on all of the residents and data on individual firms. These data were required for several different phases of the Norman Wells Project.

Since household and business data suitable for monitoring changes over time were not available from secondary records, the first step in the proposed monitoring program involved the establishment of community surveys in order to gather the necessary socio-economic information from local households and businesses. A standardized questionnaire was used to record the information supplied by each head of household and manager or owner of each business and public service agency in the four communities.

Since DIAND was particularly interested in the impact upon native peoples, the data gathering program was designed to record the descent of the respondents. Other major characteristics of the data survey are:

1. information was collected on all members of the community from the head of the household and the manager/owner of a business or public agency;

2. the data were gathered for three key time periods: pre-construction, construction and post-construction periods;

3. the information collected allowed for the identification of change from one year to the next; and

4. the responses of local residents were recorded in a format allowing for easy entry as a data set into the Vax 8600 computer system at the University of Saskatchewan.

The monitoring program was carried out by the Department of Geography of the University of Saskatchewan under the guidance of Dr. Robert M. Bone. He reported directly to the Norman Wells Project Coordination Support Group which

was created by the Northern Policy and Program Planning Branch of DIAND for the purpose of facilitating the Department's Norman Wells activities. Senior members of this monitoring team were David Stewart, Bob Mahnic and Paul Bates.

The DIAND Socio-Economic Impact Monitoring Program was designed to objectively record local socio-economic conditions over time. After collecting this information from the local residents, its first objective was to provide a statistical account of the responses of local residents to the federal government, the studied communities and other interested parties. Its second objective was to produce reports describing the major changes occurring in these communities. A list of these reports is found in the appendix and copies of these reports are available upon request from the Norman Wells Project Coordination Office in the Constitutional Development and Strategic Planning Branch of DIAND.

3.1 Other Monitoring Programs

There were two other programs monitoring different aspects of the Norman Wells Project. These programs were undertaken by the Proponents and by the Dene Nation in association with members of the School of Community and Regional Planning at the University of British Columbia.

The monitoring programs of Esso and IPL began in 1982 and ended in 1985. They produced a series of annual socio-economic reports and quarterly status reports. These reports provided statistical information and descriptive material on nine major topics (community consultation, northern business opportunities, orientation plans, manpower, training and employment, community services and infrastructure, security, transportation and socio-economic monitoring). The purpose of the companies' reports was to demonstrate that they were meeting their obligations as stated in the Socio-Economic Action Plans. The documentation presented in these reports was largely based on their administrative records of employment and business subcontracts. For example, the annual number and value of contracts awarded to northern communities is found in these reports. It should be noted that both companies reported that they exceeded their commitments

stated in their Socio-Economic Action Plans (Esso, 1985, p. 1 and IPL, 1985, p. 2). For example, in their reports to the wrap-up session held by the Norman Wells Project Coordination Office dated September 1985, IPL stated that it awarded $68.4 million worth of contracts to northern businesses in the NWT and northern Alberta compared to a commitment of $61.5 million (IPL, 1985, p. 35) while Esso declared that it awarded about $100 million to northern businesses compared to a commitment of about $40 million (Esso, 1985, p. 1).

The Dene Gondie Study began in 1984 and was primarily concerned with Dene perceptions of the impacts of the Norman Wells Project on native peoples and their way of life (The Dene Nation, 1986). The Dene Gondie study, based on data collected from a sample of Dene residents in seven communities, had four stated objectives (1986, p. 5). These were: (1) to gather credible information about how the Norman Wells Project has impacted the communities; (2) to provide better information to the communities, regional councils and the Dene Nation for social and economic planning; (3) to publish and publicize the Norman Wells experience; and (4) to provide mutual training, both to the Dene and to southern based university students, in gathering and analyzing socio-economic data.

Each of the three monitoring programs, the DIAND study, the companies' reports and the Dene Nation study, had a different set of objectives and each was conducted differently. While there was some overlap in subject matter, each program had its own mandate and operated independently.

4. THE DESIGN OF THE DIAND MONITORING PROGRAM

The design of the Norman Wells Socio-Economic Impact Program involved four main considerations: (1) the data needed for monitoring, (2) the selection of questions for local residents, (3) the design of the questionnaires and (4) the collection procedures. Each of these considerations is discussed along with several constraints which shape the direction and scope of the program.

4.1 Selection of the Impact Zone

The selection of the communities to be included in the socio-economic impact study area is an important decision. In a monitoring program, all the communities affected by the construction program should be included in the impact study area. In the case of the Norman Wells Socio-Economic Impact Monitoring Program, however, DIAND was only able to fund a monitoring program for the four communities directly affected by the Norman Wells Project, Norman Wells, Fort Norman, Wrigley and Fort Simpson.

4.2 Data Needs for Monitoring

The DIAND monitoring program required two types of information on the households and businesses in the four communities. One type of information dealt with the basic demographic, social and economic characteristics of each household and business in the four communities while the other focused on economic and social impacts of the Norman Wells Project on the residents and businessmen of the four communities. These two types of monitoring data can be described as basic and impact data.

Both types of data must be comparable from one year to the next. This requirement means that the questions asked of the residents be the same from one year to the next. Given the limited amount of information available on the four communities and the absence of any survey program by the GNWT to collect the necessary information, the DIAND monitoring program found it necessary to undertake the data collection work. This data collection process was modelled after the census household enumeration system.

4.3 Primary and Secondary Data

Data collected from the residents for the purpose of monitoring are referred to as primary data while data obtained from other sources are called secondary data. Secondary data may have a use in monitoring programs if the data are relevant to the particular factors being measured over time.

The primary attraction of secondary data is that these statistics have been collected by other agencies and therefore there are no survey, coding and data preparation costs charged to the monitoring program. Other advantages are (1) the researcher does not have to bother the impacted community and its residents and (2) administrative records may provide information on issues too sensitive to ask people about. Its main disadvantages are that (1) secondary data do not provide information on many issues of concern to the monitoring program, (2) they have dubious value for research because the administrative definition or rules governing the data collection may have changed over time, and (3) they are not readily available at the household level from public agencies because of the issue of confidentiality.

In the case of the DIAND Socio-Economic Impact Monitoring Program, both the basic and impact data could only be obtained by collecting information directly from local residents and businessmen/women. Given this situation, two questionnaires were designed to obtain the necessary responses from the residents and businessmen/women in the four communities and annual data surveys took place in these communities.

4.4 Confidentiality

The issue of confidential treatment of information supplied by local residents is a critical issue in any monitoring program. Since the DIAND monitoring program was based on personal information obtained from local residents, it was necessary to assure them that their responses would be kept confidential. In many cases, local citizens, particularly businessmen and political leaders, were concerned that other members of the community would learn of their privately-held views. In the case of Esso, a letter was sent to them stating that the information supplied by them would be kept confidential and it would only be published in an aggregated form.

For this reason, only the research team had access to the monitoring data. The individual responses were only seen by members of the monitoring team during

the collecting and coding of these responses. Afterwards, the researchers would be working with aggregated figures in order to run statistical analysis and to write the various reports. The published data and reports used community totals for the socio-economic variables so that an individual response would not be identifiable in the published reports or in any correspondence with DIAND.

4.5 When To Collect Data

In the DIAND socio-economic impact monitoring program, information was collected from residents in the four communities for three distinct phases of the Norman Wells Project. These were called the pre-construction period, the construction period and the post-construction period.

The data collected in the pre-construction period provided the base line information on the residents of the four communities. Changes occurring in the construction period could then be attributed to the Norman Wells Project. This assumption is based on the fact that the Norman Wells Project and associated developments dominated the events taking place in the four communities. Two important economic events did occur during the construction period. These were the extension of the Mackenzie Highway to Wrigley and the oil exploration activities in the impact zone by other oil companies.

The actual data collection took place once a year for the business questionnaire and biannually for the household questionnaire. The business survey was conducted in 1982, 1983, 1984 and 1985. The household surveys took place in 1982, 1984 and 1985.

This data survey plan was affected by two unforeseen events. These were:

1. in 1984, the bands at Fort Simpson and Wrigley did not wish to have a survey conducted in their communities and so the 1984 survey did not take place in those two communities; and

2. fiscal restraints prevented DIAND from funding the 1986 field season. Since the Norman Wells Project was completed in March 1985 rather than July 1985, the June 1985 survey served as the post-construction

year. For this reason, both the household and business surveys took place in 1985.

4.6 How to Collect Data

Selecting a method or methods of data collection is an important decision. There are three main methods of data collection. These are a structured questionnaire, unstructured questionnaire and participatory observation.

A structured questionnaire consists of a series of questions asked of all respondents. The advantage of a questionnaire is that the same questions are asked, giving it a consistency and allowing for comparisons between respondents and between different times. The disadvantage is that a questionnaire is a rigid information gathering tool. If the questionnaire is poorly designed, then the results are weak. Another potential problem with gathering data by means of a questionnaire is that the responses are difficult to interpret if the researchers are not familiar with the region and its history.

The unstructured interviewing method encourages the respondents to freely develop the conversation about a subject, such as the Norman Wells Project. While the interviewer does not have a specific set of questions to follow, the interviewer has to use his discretion in raising questions and in directing the conversation. The main difficulty with this approach is that each interview is somewhat unique. Another constraint is that the interviewer must be well versed in this technique.

Participatory observation calls for the researcher to assume the role of a participant observer and gather data on a group of people through an involvement in the group. In this way, the researcher can observe social events as they take place in their natural setting. The task of a participant observer is more than just gathering data. He also interprets events and makes decisions about what topic to pursue. This system is very flexible and the observer is able to deal with sensitive issues much better than a questionnaire. Usually this information gathering system has a broad set of goals and information is collected accordingly. The chief

disadvantage of participatory observation is the long length of time required to obtain the information, particularly when a complete survey of each household is desired. Another problem is making certain that the information is comparable from one household to another and from one community to another.

Given the time constraints, the need for a wide range of data, and the difficulty and complexity of collecting and ensuring comparability of such observations between households and business firms, the decision was made to employ a structured questionnaire approach. The use of a structured questionnaire is common in survey research because it yields systematic information for all respondents and because the data structure can be easily represented by codes or numbers. These codes or numbers relate to the responses to questions and they can be easily processed by a computer and then analysed by statistical procedures.

4.7 What Questions

The selection of questions for a questionnaire is a major decision in the initial stage of a monitoring program. Two objectives of the selection process are: (1) to ask questions on a wide range of information which will allow a full documentation of socio-economic impacts and (2) to develop a set of questions acceptable to the residents of the community to be surveyed.

In the case of the Norman Wells Project, the concerns expressed in the two public inquiries (FEARO and NEB) provided a solid framework for determining questions. A central theme running through both inquiries was the issue of the distribution of economic benefits and social costs for northerners.

The questions asked in the household question fell into three main sections: (1) Population-Occupation Registry; (2) Consumer Survey; and (3) Perception Survey. The community business and public services survey also consisted of three sections: (1) Business Operations, including the percentage of goods and services by type purchased outside the Northwest Territories; (2) Perception Questions; and (3) an Employee Registry.

4.8 The Length of the Questionnaire

The length of a questionnaire is limited by how much time a respondent will be willing to spend with a surveyor. It was estimated that 30 minutes should be the maximum time for the household questionnaire and 15 minutes for the business questionnaire. In responding to the questionnaires, respondents rarely complained about the length of time required to answer all the questions.

During the course of the questionnaire interview, some respondents wished to discuss certain issues surrounding the Norman Wells Project while a few others wanted to talk about local issues which had no direct relationship to the Norman Well Project. Most of these discussion were useful but they all took extra time and the survey program should include time for such discussions.

4.9 Design of Questions

The wording of a question can affect the responses. For instance, in the 1982 household questionnaire, the respondent was asked to state the annual income for each working member of his/her household. This question was subdivided into income derived from wage employment, trapping/fishing, welfare and U.I.C. payments. Only 57% of the respondents answered this question. In 1985, this question was simplified and the respondent was only asked for the range of income of each working member. As a result, the response rate rose to 77% from its previous figure of 57%, demonstrating how slight differences in the form of the question can affect the response rate. While some information was lost by using an income range rather than the actual income, this loss is offset by a higher response rate.

4.10 Pre-Testing the Questionnaire

The pre-testing of questionnaires is extremely useful and allows (1) a fine tuning of the questions, (2) the verification of the correct sequence of questions, and (3) the obtaining of local input and reaction. It also serves to bring the program to the attention of the local councils and residents.

In June 1982, the monitoring team visited two of the communities selected for the monitoring program, Norman Wells and Fort Norman. While it was desirable to pre-test the questionnaires in all four communities, budget constraints prevented this approach.

Norman Wells was selected for pre-testing work because it was the site of most of the construction activity taking place that year. Therefore, it was felt that the variety of socio-economic impacts would first appear in Norman Wells. Fort Norman was chosen because it was a native community and the reaction of Metis and Status Indians to the questions was an important pre-testing element. As a result of this pre-testing, the wording of several questions was simplified, the sequence of questions altered and a new question on joint ventures was added.

4.11 Basic Questions and Impact Questions

In 1982, the first questionnaire was designed to collect basic information on the number of residents in each community, their activities, demographic-social characteristics, shopping behaviour and perceptions about development and how it might affect their community. The purpose of these basic questions was to provide a base line for each community. These basic questions were repeated in each later survey. After 1982, impact questions were added in order to measure the effect of the Norman Wells Project on each community. An example of an impact question is: In social terms, what effect has the construction of the Norman Wells Project had on your community? The provided response range extends along a line with one end designated as 'bad', the middle as 'no effect' and the other end of the line marked as 'good'. This Likert scaled line allowed the respondent to mark the line at any point, thus providing a measure of an individual's interpretation of the total effect of the project on his/her community.

5. FIELD SURVEY WORK

Field surveys were conducted by the staff of the Norman Wells Socio-Economic Impact Monitoring research team or by local residents trained by the research staff. These surveyors asked each head of household and each

businessperson a set of questions associated with two questionnaires.

All heads of households in the four communities who had resided in the community for at least 12 months were interviewed. The main reason for restricting the interviews to those who had resided in the community for at least a year was the assumption that a number of the questions could only be answered if the resident had been in the community for at least a year.

The second questionnaire, the Business and Public Service one, was administered to all businesses and public services present in each of the four communities. This questionnaire obtained information on the number and occupations of each employees as well as information on the type of firm and the size of its operations.

5.1 The Question of Sampling

Survey work is both expensive and time consuming. For this reason, many research projects avoid a total enumeration of a population by using a sampling approach, i.e., taking 20% of the population rather than 100%. The sampling technique is most commonly used with a very large population. Even the Census of Canada uses this approach for part of its census enumeration.

In the case of the four communities to be monitored, their populations were quite small, making the sampling approach questionable. Added to this fact, the monitoring program needed to differentiate between native and non-native responses. Therefore, we elected to survey the entire population of the four communities. This decision to undertake full surveys of each community was reinforced by the findings of Report 3-84 which found that "... there are sharp differences in attitudes towards northern development and the Norman Wells Project" in each of the four communities (Report 3-84, p. ix).

Two other compelling reasons for conducting a total survey rather than using the sampling approach were: (1) comparing households over time, and (2) the desire to employ cross-tabulations and other statistical techniques on specific

variables. For instance, the ability to compare various responses such as the income levels of native adults by age and sex was extremely important in analyzing and interpreting the data. Meaningful cross-tabulations cannot be undertaken if the population sub-units are too small. For example, Wrigley, the smallest community with a population of under 150 persons, has about 30 households and about five businesses/public agencies. If a 20% sample survey were conducted, only six households and one businessman/women or manager of a public agency would be selected for responding to the two questionnaires.

5.2 Time Required for Surveying

A census-like survey of northern communities requires considerable planning. Since the cost of undertaking survey work is high, the time spent in each community must be carefully determined prior to the survey. An estimate of the time required for the household survey was based on census population figures for 1981 and the average time estimated to complete a household questionnaire.

The 1981 Census of Canada reported that the four study communities had a total population of 1823 with 420 people residing at Norman Wells; 286 at Fort Norman, 137 at Wrigley and 980 at Fort Simpson. The census also indicated that the lowest average household size of 3.1 persons was recorded at Norman Wells and the largest at Wrigley at 4.8.

These population figures were used to estimate the time required to conduct the household questionnaire in each community. Assuming three and four persons per household, two estimates of the total number of households were prepared. The estimated range of households to be surveyed varied from a low of 456 to a high of 608.

Prior to the commencement of the survey work, the average time estimated to complete a household questionnaire was 30 minutes plus another 30 minutes assigned to discussing the nature of the questionnaire and its relationship to the impact monitoring work with the respondent plus walking from one residence to another. The daily average number of completed household surveys obtained by

the enumerator was estimated at eight. Surveying was assumed to take place seven days a week, morning, afternoon and evenings.

In terms of the number of households to be surveyed, the problem of conducting a household survey appears to be a relatively simple matter. According to our pre-survey estimates, the total time needed to conduct the household questionnaires was estimated at between 15 and 20 days. Travel time between communities was expected to add another 5 days.

Once in the field, several complicating factors appeared which made surveying more difficult and therefore requiring more time. Actual survey time for the household questionnaire required closer to 30 working days.

One reason for the need for more field time was due to the decision not to commence questionnaire interviews until a meeting with the local council had taken place and the local council had approved our survey program. Sometimes there were unexpected delays in meeting with these councils and in other cases more than one meeting was necessary.

Another reason was that the actual surveying of households and businesses was more complicated than anticipated during planning in Saskatoon. The main complications were:

1. delays in hiring local survey assistants and translators;

2. the lack of well defined boundaries to a community;

3. the tendency for some residents to have a dual residence, one in town and one in the bush. For this reason, these residents were more difficult to contact;

4. the fluid nature of some native and non-native households. For native households, members of an extended family may come or go, sometimes in response to the hunting/trapping season and sometimes for personal reasons. At Norman Wells, non-native households often changed during the construction of the Norman Wells Project because of friends and relatives coming north in search of a job.

5. the ineligibility of some non-native households because of the survey requirement that at least one member of that household has lived in the community for the past 12 months;

6. the existence of a significant number of households in which only a native language is spoken;

7. the seasonal movement of some native families on to the land; and

8. the delaying effect of poor weather (snow or rain) or some special community event upon the rate of household surveys being completed.

Some of the measures taken in the field to overcome these difficulties included:

1. to enumerate all households within the built-up area of the community;

2. to record all households on maps of the communities and to indicate whether or not they had been surveyed;

3. to divide the survey work according to geographic zones, having one enumerator responsible for all the households in a particular zone (set of blocks);

4. limit the number of visits to a house to three; if no one responds, surveying stops and the questionnaire is considered incomplete;

5. in the case of someone away from the community, a limited amount of information can be collected from a neighbour, such as the number of persons living in the household; and

6. accepting the fact that some local conditions and/or events are going to cause delays in the collection of information from community residents, thereby creating a need for more time in the communities.

5.3 Household Participation Rate

Prior to the 1982 survey, there were two reasons why it was believed that the entire population would not participate in the household survey: (1) people could not be contacted because they were absent from the community during the course of the survey; and (2) people refused to participate in the survey. Another factor was that, at Norman Wells, people were working long hours and therefore were

difficult to contact at home.

Actual participation rates for the three household surveys were 75% in 1982; 71% in 1984; and 81% in 1985 (Report 1-85, p. 10). The lowest participation rate of a community occurred at Fort Norman in 1984.

5.4 Survey Training Programs

In 1985, the questionnaire survey work was conducted by local native development corporations. This new approach required a training program for each community survey group. The basic objectives of the training program were:

1. to fully familiarize the local surveyors with the purpose and objectives of the program;
2. to examine and discuss each question in a group session;
3. to ensure a full understanding and to provide an opportunity for them to ask questions; and
4. to have each trainee conduct several household surveys and then have the responses examined and discussed with the professional staff of the monitoring program and other trainees.

Following the completion of the training program, the actual survey program began. Each completed questionnaire was examined by the professional staff and if there was a problem with responses or the lack of a response, a discussion was held with the local surveyor. If necessary, the surveyor revisited the respondent to clarify or complete a response.

The results of the 1985 household survey compared very favourably with earlier household surveys conducted by University of Saskatchewan staff. A comparison of the response rates by communities, as discussed in Report 1-85 (p. 10), reveals a rate of 75% for all four communities in 1982 and 81% in 1985. Furthermore, there was a general improvement in the response rate to individual questions. For instance, the average response rate to the consumption of country food question was 93.5% in 1982 and 99.7% in 1985 (Report 1-85, p. 14). While

both response levels are very high, the improvement of 6 percentage points is significant.

5.5 The Business and Public Services Questionnaire

The business and public services questionnaire survey involved all firms and agencies in each community. Prior to the survey, an attempt was made to compile a complete list of these businesses by using a variety of secondary sources, such as a list of business licenses from the settlement councils, the Northwestel telephone book and the NWT Data Book, 1981-82 (Report 1-84).

The first annual business survey took place in 1982 and it occurred each year until 1985. Because a large number of firms at Norman Wells have their headquarters in the south, Esso agreed to send our business questionnaires to these contractors and, when the contractor answered the questionnaire, to send us the completed questionnaire. Esso assigned one staff member to this task for a portion of each year. Unfortunately, this approach was very slow and all the completed questionnaires did not arrive in Saskatoon until the spring, some eight months after the field interviews were completed. This delayed the preparation of the database and the analysis of the data. Even so, a great deal of information on firms working at Norman Wells but with their headquarters in the south was obtained which otherwise would not have been collected.

6. THE CREATION OF A DATABASE

The creation of a database based on the responses of the residents in the four communities to the questionnaires was an essential step in the development of the DIAND monitoring program. The time and energy required to collect and create such a database absorbed the bulk of the energies of the monitoring team and consumed the largest part of its budget.

This database consists entirely of the responses of residents of the four communities over a four year period from 1982 to 1985. The amount of information collected was considerable. For instance, in 1985 the 491 households

recorded provided over 110,000 bits of information. The total number of information bits gathered from 1982 to 1985 was 335,539.

6.1 Coding of Responses

The questionnaires were designed to allow for the coding of responses onto computer coding sheets. These coding sheets were optically scannable, making the transfer of the questionnaire responses into the Vax 8600 mainframe computer system a relatively easy job. The coding work took, on average, four students approximately two months to code all the responses to the Business And Public Services Questionnaires and four months to code all the responses to the Household Questionnaires.

Once the coded sheets were read into the University of Saskatchewan's Vax 8600 computer system, the DIAND monitoring data set was created. It consists of pages of numbers arranged into columns and rows according to the format command. After each additional survey year, the new data are appended to the existing data set. In this way, the data can be analyzed over time and space, that is, by communities for different years.

6.2 Verification of Coded Data

The next step is to check the coded responses for coding errors. The procedure first requires that frequency tables of the responses to each question are produced. At this point, the figures in the frequency tables are checked for coding errors. These types of errors are sometimes easily identified by a careful look at the frequency tables. For example, in looking at the question asking for the age of the household members, if the coder has marked the wrong column for the age of a 20 year old person, the error could produce a person 200 years old or a person 2 years old. Obviously, the first coding error would easily be detected but the second one would prove more difficult to detect and would require a cross-tabulation with other variables, such as the major activities of each household member.

6.3 Data Files

The coded data are organized into four files. These files are:

1. the Business and Public Services Data File
2. the Business and Public Services Employee Registry File
3. the Household Data File
4. the Household Member Registry File

Each file represents a segment of the data gathered by the two questionnaires. The purpose of having four files is to facilitate the analysis of the data and to establish four different levels of data: (1) business, (2) employee, (3) household and (4) individual resident.

The Business Data File provides information on the businesses and public agencies found in the four communities. Within this file, the data are organized by communities. The information focuses on the number, size and types of firms as well as the number of employees. The Business Registry File contains a list of employees by firms and the demographic and occupational characteristics of each employee. The purpose of this file is to monitor changes in the size and character of the labour force in the four communities.

The Household Data File is composed of information on each household in the four communities. This file includes household structure, consumer spending, household income and perception data. One of the main purposes of this file is to measure social and economic changes by household in the four communities. With the descent variable, all of these social and economic changes can be examined according to native and non-native populations in each of the four communities. Furthermore, since the descent variable consists of Status Indians, Non-Status Indians, Metis, Inuit and Non-Natives, the native population can be further subdivided to detect differences among the five groups.

The Household Registry File is made up of variables based on characteristics of individuals such as age, sex, descent, birthplace, income and activity. The main

purpose of this file is to assess and evaluate demographic changes among residents in each of the four communities. Again, the descent variable allows for the population to be divided into Native and Non-native residents.

6.4 Frequency Tables

The frequency tables represent the first level of analysis of the data. This analysis is a simple descriptive statistical account of the responses to each question. The frequency tables are organized by the four files. Hard copy is produced on computer print-out paper. Copies of these tables were sent to the band and settlement councils for their use in discussions with the developers. For example, information on the number of local people employed by Esso and IPL might have assisted the efforts of band and settlement councils to try and obtain more employment opportunities in their settlements.

A sample of a frequency table based on the 1983 Business and Pubic Services Questionnaire is provided below. This table contains the responses from employers on the descent of their employees. Their responses were checked against names on the band and Metis lists and, where necessary, changes were made to reflect the two lists of native peoples. Almost all changes involved cases where the employer was uncertain of the descent of his employees. While this demanded a considerable amount of work on the part of the coders, it resulted in a more complete statement of employees' descent.

DESCENT OF EMPLOYEE, NORMAN WELLS 1983

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Treaty Indian	1	110	9.8	9.8	9.8
Non Status Indian	2	2	.2	.2	10.0
Metis	3	109	9.7	9.8	19.8
Inuit	4	3	.3	.3	20.1
Other	5	892	79.5	79.9	100.0
Missing	0	6	.5		
Total		1122	100.0	100.0	

6.5 Other Statistical Analysis

In the analysis of the data for reports, a number of statistical techniques were used. The most frequent programs run were frequency distributions, cross tabulation, correlations, regressions, principal components and multiple dimensional scaling.

The results of these statistical programs allowed the researchers to prepare detailed analyses of demographic, social and economic issues. For instance, the report entitled the Analysis of Rankings of Socio-economic Impacts of the Norman Wells Pipeline Project (Report 3-84) utilized several statistical techniques, namely Kendall Concordance Coefficients and Stepwise Discriminant Analysis.

7. REPORT PREPARATION

The final task of the monitoring program was the preparation of reports. These reports discussed the main issues facing the residents of the four communities. These issues gravitated around the benefits and costs of the Norman Wells Project affecting the residents of the four study communities.

7.1 Report Writing

Twenty-eight reports were prepared on the socio-economic impacts of the Norman Wells Project on the residents of the four communities. Report writing took place after the responses from each annual survey were entered into the computer. The first four reports, written in late 1982 and 1983, discussed the database, dealt with organizational matters, and presented an analysis of the changes in the business sector between 1982 and 1983. Described as the 1983 reports, they marked the beginning of an annual report series.

The second set of monitoring reports was based on the 1984 survey results with some comparisons to earlier survey figures. Nine reports were published in this series.

The 1985 reports represent the most extensive examination of changes in the four communities and these reports were based on comparisons of 1982, 1983, 1984 and 1985 data. By August 1986, nine reports had been prepared.

The last set of reports consists of (1) an overall summary of the main findings of the Norman Wells Socio-Economic Impact Monitoring Program, (2) a statement about the monitoring process itself and (3) an account of the four report series.

A list of these reports is found in the appendix and each can be obtained from DIAND.

7.2 Report Printing and Distribution

The 1983 report series was printed and distributed from the Department of Geography at the University of Saskatchewan. In the following years, the reports have been printed and distributed by the Norman Wells Project Coordination Support Group of the Department of Indian Affairs and Northern Development.

The time required to produce, print and distribute these reports varied from about six months to a year for those published by the Department of Geography to over a year for those published by DIAND. One reason why the DIAND report series took so much longer to publish is that its reports tended to be longer and involved more data analysis than the earlier series.

While the usefulness of these reports to those affected by the Norman Wells Project would have been enhanced by having them available sooner, this was not possible. Recognizing this fact, the preliminary findings were presented to interested local communities and the Community Advisory Council of the Norman Wells Coordination Office.

8. THE NEED FOR MONITORING

The need for monitoring was stressed in the FEARO reports on the Norman

Wells Project proposal and the Beaufort Sea Hydrocarbon Production and Transportation proposal. At the Beaufort Sea hearings, the GNWT and other review participants emphasized that there was a need to begin, as soon as possible, several monitoring programs coupled with supporting research (FEARO, 1984, pp. 58-59).

Impact data can only be produced by a monitoring program and its value in the planning process results in better management of the project, provides the basis for impact mitigation and establishes a firm foundation for post-construction regional and community development strategies.

The impact information is based on the responses of local residents. In response to a series of questions, they describe the actual changes in their lives associated with the construction of a major industrial project. If this information is used in conjunction with community councils and GNWT departments responsible for socio-economic matters, for example, it can be a most effective planning tool for ensuring that the benefits and costs generated by the project fall within the range agreed upon by the companies and the federal government. This same information can provide an independent validation for the companies who are anxious to meet their commitments.

In the Socio-Economic Action Plans prepared by Esso and IPL, both companies made specific commitments. In their documentation presented at the wrap-up meeting organized by the Federal Coordination Office, they reported that they exceeded their commitments to award a certain value of contracts to northern businesses and to hire a certain percentage of northerners. One problem with the company data is their definitions of northern businesses and northern employees. If these definitions are restricted to businesses and employees from the Northwest Territories, then those from the Yukon should be excluded from the company figures. More important, if the definitions of northern business and employee include a residency requirement of one year or more, than the company figures are likely less than reported in the wrap-up report. These comments indicate the need for (1) more precise definitions of northerner and northern business, (2) recognition

of the need for agreement by those producing monitoring data on key definitions and (3) a coordinating role for the government monitoring agency which could review the variety of definitions commonly in use and recommend the most suitable ones for use in future monitoring programs.

At present, the link between monitoring and community/regional planning is very weak and this link should be greatly strengthened. The first step in this direction would be to involve the regional councils, such as the GNWT Development Impact Zone Groups (DIZ) in monitoring. These councils should become more familiar with the monitoring process and how the information generated can assist communities and regions to deal with the impacts of the mega-project. They should also consider its potential role in promoting regional and community development. The next step would be to involve the communities in the monitoring process. Since many communities have both settlement and band councils, it would be ideal to have both groups participate.

In the Canadian North, the presence of a dual society makes the need for monitoring even more urgent for several reasons, including (1) the possibility of irreversible disruption to whole communities whose way of life and social values differ from those of the dominant society, (2) the need to assist native peoples to participate in the northern wage economy, including mega-projects and (3) the development of native institutions suitable for involvement in the northern industrial economy. One example of an institutional change was the creation of the joint venture, Shetah Drilling, which involved both native organizations and Esso. These latter two measures can be enhanced by socio-economic monitoring which takes on another role by ensuring that the minority peoples have sufficient timely information about the effect of the project as it is being constructed. In this way, these communities and their residents can better understand what is happening and how to react to these events in a positive manner.

Monitoring, by providing comprehensive and objective documentation of the socio-economic impacts upon the impacted region, records the proportion of economic benefits remaining in the region and the distribution of these benefits

among the northern residents. Such information allows the regional government to deal with the question of economic leakage and its effect upon regional development.

Monitoring results allow northerners and their governments to better prepare for the next round of rapid economic development in the Northwest Territories. In the case of the Norman Wells Socio-Economic Impact Monitoring Program, federal and territorial governments have yet to take a serious look at the monitoring results from this perspective and one of the purposes of this report is to encourage them to do so.

From a planning prospective, monitoring information has five major uses:

1. provides a statistical account of 'what is happening';
2. documents the actual impact of concerns raised in the public hearings of FEARO and the NEB;
3. records the impact upon the communities, their residents and businesses;
4. identifies the variation in impacts upon native and non-native residents; and, most importantly,
5. provides vital information for local and regional planning and for the socio-economic design of future industrial projects.

Without such a program, monitoring would have been left to the companies whose focus is much narrower than that of the DIAND monitoring program, i.e., the companies were concerned about the direct economic impacts of their construction activities upon the northern workforce and upon local businesses. The Dene Nation also mounted a monitoring program but this program was limited to one data collection (in 1985) and focused only on the impact on Dene. Significantly, most of the Dene Gondie conclusions parallel our findings on the impact of the Norman Wells Project on Dene people, namely that:

1. unemployment rose in 1985 and Dene people want wage employment (Dene Gondie, p. 11 and Report 4-85, p. 4);

2. consumption of country food has remained about the same (Dene Gondie, p. 14 and Report 3-85);

3. the project had little permanent impact on Dene household income levels (Dene Gondie, p. 15 and Report 9-85, p. 11);

4. increased alcohol and drug abuse were perceived by the majority of residents as the most important negative impact of the Norman Wells Project on the Dene (Dene Gondie, p. 16 and Report 5-85, p. 26); and

5. most residents perceived the project to have little overall impact on them and their communities (Dene Gondie, p. 15 and Report 5-85, p. 25).

These five points plus the emergence of development corporations and joint ventures provide an important starting point for considering how the next mega-project may be more beneficial to the Dene. The matter of Dene/Metis development corporations and joint ventures was examined by the DIAND monitoring program and its findings suggest that these types of institutions provide native peoples with some control over the impact of development upon their people and offer them an organizational structure suitable for participating in the northern market economy.

While these three types of monitoring programs each made a contribution to recording the effect of the Norman Wells Project, the DIAND program focused on changes occurring in the four communities in the direct impact zone from 1982 to 1985. By conducting extensive community surveys each year, it was able to undertake a detailed longitudinal investigation of a wide range of community impacts. While the cost of such surveys is high, there is no other effective way of gathering impact data on small northern communities.

Examination of the DIAND monitoring experience shows that this process can be effectively done. Still, the Norman Wells Project is the first large-scale industrial development to undergo monitoring from the pre-construction period to the post-construction period and some aspects of this type of monitoring may be improved. For this reason, a discussion of the DIAND monitoring program follows with the aim of examining ways of improving the monitoring process. This

discussions focuses on three topics: (1) the users, (2) the monitoring organization and (3) the monitoring budget.

9. WHO USES MONITORING INFORMATION?

The main users of information generated by the Norman Wells Socio-Economic Impact Monitoring Program were expected to be the people in the studied communities and DIAND/GNWT officials. The public officials used statistical information in their daily work and therefore they had little problem in reading and using monitoring data. Also, the monitoring team was in regular contact with government officials, particularly the DIAND officials in Ottawa who had commissioned the study and the DIAND and GNWT Norman Wells Coordination Offices in Yellowknife. Most contacts with other participants in the Norman Wells Project occurred in the four communities and at the Community Advisory Council (CAC) meetings. These types of regular communications kept the DIAND, the local community councils/bands and, to a lesser degree, the GNWT officials informed about the monitoring program and its data.

Contact with the community councils and bands did take place but clearly a great deal more was necessary. Over the four years, there were over a dozen oral presentations of preliminary findings to community councils and three to the Community Advisory Council. These community leaders may have used these figures to obtain more benefits or to reduce negative impacts. However, there is little evidence that the communities made substantial use of these figures.

Two suggestions designed to increase local councils' awareness of the usefulness of such data are:

1. a summary of the results of each local survey should be presented at community workshops immediately after the frequency tables have been produced; and

2. at the same workshops, there should be a demonstration, showing how these data might be of use to community leaders.

Members of the DIAND monitoring program should have spent more time communicating with the principal users, the impacted communities and public officials. In fact, in the original proposal for the Norman Wells monitoring there were budget items for community liaison workers and for community meetings but these were struck from the proposal by DIAND for budgetary reasons. In hind sight, these budget items should have been approved on two grounds: (1) good communications between the monitoring team and the impacted communities is an essential element in the successful conduct of a meaningful monitoring program and (2) monitoring is an innovative program and its value as a planning tool for local and regional governments has never been used by these governments. Therefore, it is likely that such a communications program would have led to a greater use of the monitoring results by community leaders and GNWT agencies responsible for social and economic programs.

9.1 Distributing the Computer Printouts

The need to distribute the results of the survey quickly to government officials and community/band councils resulted in the sending of the actual computer printout of the responses to each question. A typical printout for a community consisted of over a hundred frequency tables forming a thick stack of computer paper. An example of a frequency table is found in section 6.4.

While the distribution of these frequency tables provided the community/band councils with the exact same data as used by the monitoring team, the interpretation of such a large amount of data was not easy. Therefore, it is likely that the use of these data by those unfamiliar with reading computer printouts may have been limited. Also, even if the user understood how to read the computer printouts, the sheer volume of information may have simply been too much to wade through to find a particular figure.

Future monitoring programs should design a better information package for local users. One such approach would be to have two stages:

(1) in the first stage, the monitoring team would select those data which are

judged to have the most relevance for each community. This process would be based heavily upon the FEARO assessment report.

(2) the second stage would see the community identify which information is needed. This latter approach would likely require direct involvement in the monitoring process by local people and this involvement may be best achieved through a local monitoring board or committee overseeing the monitoring program in that community.

10. ORGANIZATIONAL CHANGES

The experience of the DIAND Socio-Economic Impact Monitoring Program indicates that there is a need for major organization changes. First, there is the need for a closer working relationship with the impacted communities and bands. Such a relationship can only be achieved by committing more energy and resources at the local level. Secondly, the emerging regional governments (Development Impact Zone Groups and native regional councils) should play a stronger role in community and regional affairs in the years ahead and therefore in the monitoring program and its resulting planning implications. Thirdly, the GNWT should establish a permanent socio-economic monitoring agency within the GNWT. The Assembly of the NWT should pass the necessary legislation necessary to allow its agency to undertake a compliance type of socio-economic monitoring. This legislation will also allow prospective developers to prepare their proposal with the knowledge that there will be a specific form of GNWT socio-economic monitoring.

The purpose of these organizational improvements is:

1. to make the monitoring process more useful to local communities and bands;

2. to help local, regional and territorial governments make greater use of the information generated by the monitoring process;

3. to notify companies of the GNWT socio-economic monitoring agency and its role in recording northern benefits and costs;

4. to recognize that monitoring, to be truly effective, is an ongoing process

associated with company and government planning; and

5. to strengthen the government's role in compliance monitoring by establishing a legislative mandate for monitoring.

10.1 Community Monitoring Boards

The process of socio-economic impact monitoring focuses on local communities and their residents and businesses. For this reason, these communities have a special interest in the process of monitoring and its results. Therefore, the community should have direct input into the monitoring program. This input could be achieved by forming a local monitoring board in each impacted community. Each monitoring board could be a subcommittee of the community village government and/or band council.

This local board would meet frequently with the monitoring agency. As the representative of local residents, the local monitoring board could assist the monitoring agency by advising them about the type of information needed to be collected from the community, when the survey should take place and which firms might be interested in conducting the surveys. They could also ensure that the monitoring information collected circulates within the community and that the local council is aware of the monitoring information in order to make use of it in their submissions to government and in their dealings with the companies.

This approach should encourage local councils to take a greater interest in the monitoring program and to shape the questionnaires to suit their local needs. Such local involvement could lead to greater use of the monitoring results in submissions designed to help their community obtain more project benefits and to cope with any negative impacts. For example, if a negative impact is identified and documented, then this evidence should enhance the community's chances of receiving help to deal with this particular problem.

10.2 A Regional Monitoring Board

A regional monitoring board is desirable for two reasons: (1) mega-project impacts tend to have regional implications and they affect many communities in varying degrees, and (2) most northern communities have small populations, usually less than 500 residents. Their community and band councils are fully occupied with local issues and taking on an extra responsibility of monitoring may tax their resources. For these two reason, the lead agency should be a regional council, such as a Development Impact Zone Group.

There needs to be a direct link between the communities and the regional board and this link could be having a member from each community monitoring board sit on a regional monitoring board. The regional monitoring board would work closely with the GNWT monitoring agency. While the agency would present a monitoring program to the board, the board would be responsible for the approval of the program and oversee its operation.

These two proposed boards do not necessarily require separate administrative units. The local board could be attached to a village, hamlet or band council and the regional one to a Development Impact Zone Group.

Since the most likely next mega-project is the oil development in the Beaufort Sea and the building of a pipeline from Tuktoyaktuk to Edmonton, the Mackenzie Delta-Beaufort Sea Development Impact Zone Group and certain Mackenzie Valley communities should each establish an assessment/monitoring committee to prepare themselves for such development. As well, the GNWT should assist all regional councils and communities to become more familiar with the assessment and monitoring processes. The first step in this process could be to transfer any baseline statistics and monitoring methodology to the appropriate regional council. This council should receive funding to allow it to continue this preparatory work.

The proposed regional monitoring board should have a strong role to play and much of the responsibility for monitoring would logically fall under their control. In this way, the monitoring program would more effectively reflect the

needs of the impacted communities and the resulting impact information would be more apt to be used by local governments.

It is important that both the monitoring agency and the regional monitoring board should be functioning at least two years before the project is to begin because of the following needs: (1) to develop good communications between the two groups, (2) to agree on the monitoring responsibilities of the board and (3) to secure the appropriate funding to discharge those responsibilities.

10.3 A Permanent Monitoring Agency

A monitoring program like the DIAND Norman Wells program warrants permanent status within government. The case for permanent status is based on (1) the sheer size and length of time of the monitoring program, (2) the need to get the reports out quickly which is more likely to occur with a permanent agency, (3) the importance of pre-construction monitoring activities such as strengthening relations with local communities and bands, (4) the desirability to undertake post-construction impact studies, and (5) the value of having official status with a legislative mandate.

For these reasons, serious consideration should be given to the establishment of a permanent monitoring staff within either the federal or territorial government. In the authors' opinion, the GNWT should be encouraged to establish a monitoring agency and to pass the appropriate legislation necessary to give its monitoring agency a proper mandate and powers. Such a political development is a logical step along the devolution road as it would increase the GNWT's authority and responsibility over mega-projects.

An alternative model would be to assign the task of monitoring to FEARO. This approach would strengthen FEARO's role by having it undertake both the socio-economic assessment and monitoring activities. This new role should encourage FEARO to include more quantitative information and analysis in its assessment of proposed projects, thereby allowing it to make more scientific estimates of possible impacts. Also, if FEARO created a socio-economic database

for the purpose of assessing possible impacts, then this same data set could be used as the baseline data for the monitoring program. The major drawback in opting for the FEARO model is that this would run counter to the devolution process and would therefore prevent the GNWT from gaining new authorities and responsibilities.

There are several advantages to having a permanent monitoring staff. These include:

1. many monitoring skills are learnt on the job and therefore there is an accumulation of skills by a permanent group;

2. monitoring techniques and reporting mechanisms can be improved by such a group between projects;

3. communications with northern communities, Development Impact Zone groups, native organizations and others can be strengthened between projects;

4. discussions could take place with these northern groups on such issues as 'what is monitoring and how can it be of use' to a community, how best to monitor the next project, what information is needed, what kind of input do communities and regional councils want in the monitoring process and how, when and where do they want the results of monitoring presented to them; and

5. the capacity is created to develop an information baseline of socio-economic conditions before the project is approved.

Although there are a number of high level decisions to be made as well as a great deal of work associated with the development of a monitoring agency, a monitoring agency should be established by 1988. Such a time frame should provide sufficient preparation time before the next mega-project is announced.

10.4 Location of the Monitoring Agency

The monitoring staff, which should be based in the Northwest Territories, should spend much of their time in the impacted communities. In the case of the Norman Wells Project, for example, the monitoring staff could have been located in one of the four impacted communities. This approach would likely have increased

communications with local councils and made the staff more aware of local issues and concerns. As well, the recruitment and training of local residents as members of the survey team would have been made easier.

In 1982, it was necessary to do the computer work associated with the Norman Wells Socio-Economic Impact Monitoring Program data set on a large mainframe. Today, it is possible to purchase a micro computer with a hard disc, which gives this small computer the enormous capacity necessary for large monitoring data sets. As well, the software programs used to analyze the Norman Wells data, such as the Statistical Package for Social Sciences (SPSSX), is now available on floppy diskettes. For this reason, it is now technically possible to undertake the computer work in small northern centers.

10.5 Monitoring and Funding

Funding of the DIAND monitoring program was often delayed and this annual problem not only affected morale but it also absorbed energies badly needed in the monitoring program. In addition, the 1985 contractual agreement was delayed for over a year because of the federal government's fiscal restraint program imposed on all departments. Imposition of these fiscal restraints also interfered with the printing of these reports, causing the publishing of the 1985 and 1986 series to be seriously delayed.

If DIAND or the GNWT plans to contract out future monitoring work, then the funding must be guaranteed for the life of the project. There are two reasons for this funding guarantee: (1) it demonstrates the commitment of the public agency and (2) ensures that the monitoring staff will remain with the program. The latter point is extremely important because the continuity of monitoring work is best served by having the same people doing the work through a specific project. If the monitoring staff is composed of government employees on special assignments or temporary government employees on term contracts, they should be hired for the entire length of the program; similarly, if the contract is with an outside contractor such as a university or a consulting firm, the funding should be in place for the

entire program and not be subject to a year-by-year approval mechanism.

11. RECOMMENDATIONS

The DIAND Norman Wells Socio-Economic Impact Monitoring Program represents an important new step in northern resource development by providing a measure of the Norman Wells Project's impact on the communities in its construction zone. As the first socio-economic monitoring program in northern Canada, it broke new ground and many of its activities may be appropriate for future monitoring efforts. The following recommendations are designed to assist those responsible for the creation of the next monitoring program.

These recommendations fall into three groups: organizational changes, data collection and information distribution.

11.1 Organizational Changes

1. the monitoring program should begin no later than at the time of the public review phase;

2. its first task should be the preparation of a socio-economic database for the expected impacted communities; this database would have two functions: (1) provide factual information useful to the assessment process and (2) serve as the baseline data for the expected monitoring program;

3. the monitoring program should address the issue of long-term socio-economic changes to northern peoples and their way of life and, for this reason alone, monitoring should continue for some time after the project is completed;

4. since monitoring of northern projects is an important, complex and on-going task, a permanent monitoring agency should be created within government. Three possibilities exist: (1) the Department of Indian Affairs and Northern Development, (2) the Federal Environment and Assessment Review Office or (3) the Government of the Northwest Territories;

5. the agency should be located in the Northwest Territories and, when a project is announced, it should be relocated to a community in the impact zone;

6. local and regional monitoring boards should be formed and they should have substantial input and control over the monitoring program. They should also assume a high degree of responsibility for the performance of the monitoring program. These boards could very well be subcommittees under the control of community and regional governments;

7. such monitoring boards would provide direction to the monitoring staff by identifying the major concerns of the impacted region, approving of the monitoring program and releasing the monitoring information and reports. The lead board would be the regional one and it should have considerable control over the actual monitoring program;

8. these monitoring boards would provide monitoring information to the communities by holding community workshops and it would inform its monitoring staff of any new community concerns; and

9. the monitoring agency's staff should spend more time in direct contact with the councils in the impacted communities and this type of contact can best be achieved by locating the monitoring staff in one of the study communities.

11.2 Data Collection

1. a data collection proposal should be prepared by the monitoring staff after direct consultations with the impacted communities and presented to the monitoring committee for approval;

2. the approved proposal should then be presented to the impacted community and band councils by the chairperson of the monitoring committee, the local representative on the monitoring committee and the director of the monitoring program;

3. the survey work should be contracted to a local business or a native development corporation;

4. a survey training program should be conducted by the monitoring staff in each community;

5. a local resident in each community should be permanently employed to ensure year-round communications between the local community and the monitoring staff and this person should also be the local resident responsible for the survey contract; and

6. a business survey of firms involved in the construction of the mega-project but whose head office is located in the south should be

undertaken by the monitoring agency.

11.3 Information Distribution

1. the results of the survey work should be considered public information and this information should be widely distributed;

2. tabulation of responses to each question in the community surveys should be supplied to the local community councils, appropriate regional councils, territorial native organizations, the proponents, government agencies and other interested parties;

3. the survey information and reports should be published quickly in order for the monitoring information to be used to modify the project; and

4. if requested, workshops should be held in the surveyed community, regional councils, and territorial native organizations to explain the results and to obtain their reaction.

12. CONCLUSIONS

New energy projects are largely dictated by world demand. Since this demand is irregular, economic growth in the Northwest Territories is characterized by very rapid economic growth followed by an economic slowdown. This pattern of economic growth places a great deal of importance upon mega-projects and it is the purpose of monitoring to provide the necessary information to assist northern planners and decision-makers obtain the maximum benefits and the minimum social costs from such projects.

In this light, monitoring of the socio-economic impacts of large-scale industrial developments in the Northwest Territories is more than a necessary activity of government, it is a vital planning tool by being related to the dual task of creating a stronger economic base and a more just society in the Northwest Territories. Specific aspects of mega-projects related to this dual task include: (1) reduction of the leakage of benefits generated by large-scale projects to southern Canada, (2) encouragement of joint ventures between the proponents and native organizations, (3) heavy investment in the education/training of the human resources for project

jobs and (4) obligations by the proponents to ensure a specific flow of jobs and contracts to northerners and to reduce any social impacts to manageable levels. Monitoring, by recording and analyzing the economic and social impacts of the mega-project on northern people and their communities, provides the necessary information to measure progress towards these two goals and to provide planners with information on how to accelerate this progress.

Socio-economic monitoring is, therefore, an important government function. There are at least three key reasons for monitoring large-scale projects in the future. These are: (1) the persistence of wide economic and social disparities in northern Canada where native peoples are generally less well off and less well prepared for taking advantage of economic opportunities and more vulnerable to social costs than most non-native people: (2) the desire and will of native peoples, Canadian society and the territorial and federal governments to use development projects as a means to try to narrow these socio-economic differences; and (3) the usefulness of the results of monitoring programs to government and other members of our society in terms of addressing this issue of reducing the economic and social disparity.

From this perspective, monitoring is more than recording what is happening, but is a vital tool to assist society to measure its progress towards certain economic and social goals. In this sense, monitoring and planning go hand in hand to ensure that a new and more equitable distribution of benefits occurs and that the social burden of development to local residents is eliminated or at least greatly reduced.

Since monitoring of an industrial project has strong implications for many sectors of our society but particularly for the developers and the people in the impact zone, the establishment of a permanent monitoring agency within a government agency, whether it be in the federal or territorial government, would be a progressive step forward. The location of such a monitoring agency in the Northwest Territories would make it more effective and sensitive to northern issues without becoming a captive of the political views of one particular northern group.

Most importantly, monitoring can only be a success if it is both the servant of the impacted communities and a responsibility of the northern governments.

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